

WHAT IS CLAIMED IS

1. A system for multiple image analysis comprising:

a first light source;

5 a second light source;

a camera; and

a multiple image processor coupled to the first light  
source, the second light source, and the camera, the  
multiple image processor causing the first light source and  
10 the second light source to turn on and the camera to  
generate two or more sets of image data.

2. The system of claim 1 wherein the first light  
source emits light having a first frequency and the second  
15 light source emits light having a second frequency.

3. The system of claim 2 wherein the camera can  
generate two or more sets of image data when both the first  
light source and the second light source are emitting light.

4. The system of claim 2 wherein the camera further  
comprises:

a first set of pixels receiving light at the first  
frequency; and

25 a second set of pixels receiving light at the second  
frequency.

5. The system of claim 2 wherein the camera further  
comprises:

30 a first filter passing light at the first frequency;  
and

a second filter passing light at the second frequency.

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6. The system of claim 1 wherein the multiple image processor further comprises a light sequence controller causing the first light source and the second light source  
5 to turn on and turn off.

7. The system of claim 1 wherein the multiple image processor further comprises an image analyzer receiving the two or more sets of image data and generating status data  
10 that indicates whether the image data is acceptable.

8. The system of claim 1 wherein the multiple image processor further comprises a first image analyzer receiving the first set of image data and a second image analyzer  
15 receiving the second set of image data and generating status data that indicates whether the image data is acceptable.

9. The system of claim 1 wherein the multiple image processor further comprises an image comparator receiving  
20 the two or more sets of image data and generating difference data.

10. The system of claim 1 wherein the multiple image processor further comprises an image constructor receiving  
25 the two or more sets of image data and generating dimensional variation data.

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11. A method for inspecting a component comprising:  
illuminating the component from a first illumination  
angle;

receiving first image data of the component;

5 illuminating the component from a second illumination  
angle;

receiving second image data of the component; and

using the first image data and the second image data to  
determine whether a dimension of the component is  
10 acceptable.

12. The method of claim 11 wherein illuminating the  
component from the first illumination angle and illuminating  
the component from the second illumination angle further  
15 comprises illuminating the component using light having a  
first frequency from the first illumination angle and  
illuminating the component using light having a second  
frequency from the second illumination angle.

20 13. The method of claim 11 wherein receiving the first  
image data of the component comprises receiving the first  
image data of the component by filtering light received from  
the component.

25 14. The method of claim 11 wherein receiving the first  
image data of the component and receiving the second image  
data of the component comprises receiving the first image  
data of the component by filtering light received from the  
component with a first filter and receiving the second image  
30 data of the component by filtering light received from the  
component with a second filter.

16. The method of claim 11 wherein receiving the first image data of the component and receiving the second image data of the component comprises receiving the first image data of the component with a first set of pixels and receiving the second image data of the component with a second set of pixels.

# THEORY OF THE EARTH

17. A method for inspecting a component comprising:  
receiving first image data and second image data of the  
component;

5 comparing the first image data to reference image data  
to generate first difference data;

comparing the second image data to reference image data  
to generate second difference data; and

generating component dimension data from the first  
difference data and the second difference data.

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18. The method of claim 17 further comprising:

combining the first image data and the second image  
data to generate composite image data;

15 comparing the composite image data to composite  
reference data to generate composite difference data; and

generating component dimension data from the composite  
difference data.

19. The method of claim 17 wherein the step of  
20 receiving the first image data and the second image data of  
the component is preceded by the step of receiving status  
data that indicates that the component requires additional  
analysis to determine whether it has unacceptable  
dimensional variations.

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20. The method of claim 17 wherein generating the  
component dimension data from the first difference data and  
the second difference data further comprises using light  
source angular data to generate the component dimension  
30 data.